CEMENT

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: Production of portland cement in 2018 in the United States increased slightly to about 85.4 million tons, and output of masonry cement continued to be stagnant at 2.4 million tons. Cement was produced at 98 plants in 34 States, and at 2 plants in Puerto Rico. Overall U.S. cement production continued to be well below the record level of 99 million tons reported in 2005, indicating continued full-time idle status at a few plants, underutilized capacity at many others, production disruptions from plant upgrades, plant closures over the interim, and relatively inexpensive imports in some recent years. Sales of cement increased by nearly 3% in 2018. Overall, shipments were 27.8 million tons lower than the record volume set in 2005. The overall value of shipments was nearly $12.7 billion. Most of the sales of cement were to make concrete, worth at least $66 billion. In recent years, about 70% to 75% of cement sales have been to ready-mixed concrete producers, 8% to 10% to contractors (mainly road paving; much contractor work also involves ready-mixed concrete), about 10% to concrete product manufacturers, and 7% to 10% to other customer types. Texas, California, Missouri, Florida, and Alabama were, in descending order of production, the five leading cement-producing States and accounted for nearly 50% of U.S. production.

Salient Statistics—United States:[1]	2014	2015	2016	2017	2018[e]
Production:					
Portland and masonry cement[2]	82,535	84,405	84,695	[e]86,100	87,800
Clinker	74,372	76,043	75,633	76,542	77,700
Shipments to final customers, includes exports	90,204	93,338	95,373	97,359	100,000
Imports of hydraulic cement for consumption	7,584	10,376	11,742	12,288	14,000
Imports of clinker for consumption	720	942	1,496	1,209	910
Exports of hydraulic cement and clinker	1,404	1,288	1,283	1,035	1,000
Consumption, apparent[3]	89,145	92,403	94,964	[e]97,400	100,200
Price, average mill value, dollars per ton	100.50	106.50	111.00	[e]121.00	126.50
Stocks, cement, yearend	6,140	7,230	7,420	[e]7,400	8,050
Employment, mine and mill, number[e]	11,500	11,300	11,000	10,500	10,000
Net import reliance[4] as a percentage of apparent consumption	8	11	13	13	14

Recycling: Cement kiln dust is routinely recycled to the kilns, which also can make use of a variety of waste fuels and recycled raw materials such as slags and fly ash. Various secondary materials can be incorporated as supplementary cementitious materials (SCMs) in blended cements and in the cement paste in concrete. Cement is not directly recycled, but significant quantities of concrete are recycled for use as construction aggregate.

Import Sources (2014–17):[5] Canada, 33%; Greece, 15%; China, 13%; Republic of Korea, 8%; and other, 31%.

Tariff: Item	Number	Normal Trade Relations 12–31–18
Cement clinker	2523.10.0000	Free.
White portland cement	2523.21.0000	Free.
Other portland cement	2523.29.0000	Free.
Aluminous cement	2523.30.0000	Free.
Other hydraulic cement	2523.90.0000	Free.

Depletion Allowance: Not applicable. Certain raw materials for cement production have depletion allowances.

Government Stockpile: None.

Events, Trends, and Issues: Shipments of cement increased by nearly 3% overall in 2018, tempered by stagnant sales of masonry cement. Construction spending increased modestly during the year, largely owing to somewhat higher spending in the residential and public construction sectors; the nonresidential private building sector, however, declined slightly. Cement shipments into parts of the southeast and in Florida were lower than originally expected because of damage from hurricanes in 2017. In contrast, shipments into Puerto Rico were relatively strong because of reconstruction following devastating hurricanes in 2017. The leading cement-consuming States continued to be Texas, California, and Florida, in descending order by tonnage. Production of cement remained well below capacity, in part reflecting both the technical and environmental issues in returning long-idle kilns to full production at some plants, and the ready availability of imported cement in coastal markets.

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Company mergers continued in 2018, with the final approval of the sale of a major U.S. cement company to a European cement company (the sales agreement had been announced in 2017). Completion of the sale required the consolidation of the European company's holdings (two cement plants) in Florida, and the sale by the European company of its newly acquired plant in Montana to a Mexican cement company.

A major upgrade to a cement plant in Michigan was completed during the year; minor upgrades were ongoing at a number of other plants in the country. Apart from increasing production efficiency, these upgrades were expected to improve the ability of individual plants to comply with the stringent emissions limits of the 2010 National Emissions Standards for Hazardous Air Pollutants (NESHAP) protocol for cement plants, which went into effect in September 2015. Many plants have installed emissions-reduction technologies to comply with the NESHAP protocol, but it remained unclear if such modifications would be economic for all individual kilns (some being of older technology) at multikiln plants. It remained possible that some kilns would be shut down, or used only sparingly, because of the NESHAP limits, and thus constrain U.S. clinker production capacity. Despite environmental permitting difficulties in recent years reducing the attractiveness of constructing new (greenfields) plants in the United States, a project to construct a greenfields white cement plant in Texas was announced during the year; currently, the United States has only two white cement plants.

World Production and Capacity:

	Cement production[e]		Clinker capacity[e]	
	2017	2018	2017	2018
United States (includes Puerto Rico)	86,600	88,500	107,000	108,000
Brazil	53,000	52,000	60,000	60,000
China	2,320,000	2,370,000	2,000,000	2,000,000
Egypt	53,000	55,000	48,000	48,000
India	290,000	290,000	280,000	280,000
Indonesia	65,000	67,000	78,000	78,000
Iran	54,000	53,000	80,000	80,000
Japan	55,200	55,500	53,000	53,000
Korea, Republic of	56,500	56,000	50,000	50,000
Russia	54,700	55,000	80,000	80,000
Saudi Arabia	47,100	45,000	75,000	75,000
Turkey	80,600	84,000	80,000	82,000
Vietnam	78,800	80,000	90,000	90,000
Other countries (rounded)	756,000	759,000	717,000	716,000
World total (rounded)	4,050,000	4,100,000	3,800,000	3,800,000

World Resources: Although reserves at individual plants are subject to exhaustion, limestone and other cement raw materials are geologically widespread and abundant, and overall shortages are unlikely in the future.

Substitutes: Most portland cement is used to make concrete, mortars, or stuccos, and competes in the construction sector with concrete substitutes, such as aluminum, asphalt, clay brick, fiberglass, glass, gypsum (plaster), steel, stone, and wood. Certain materials, especially fly ash and ground granulated blast furnace slag, develop good hydraulic cementitious properties by reacting with lime, such as that released by the hydration of portland cement. Where readily available (including as imports), these SCMs are increasingly being used as partial substitutes for portland cement in many concrete applications and are components of finished blended cements.

[e]Estimated.

[1]Portland plus masonry cement unless otherwise noted; excludes Puerto Rico unless otherwise noted.

[2]Includes cement made from imported clinker.

[3]Defined as production of cement (including from imported clinker) + imports (excluding clinker) – exports + adjustments for stock changes.

[4]Defined as imports (cement and clinker) – exports.

[5]Hydraulic cement and clinker; includes imports into Puerto Rico.